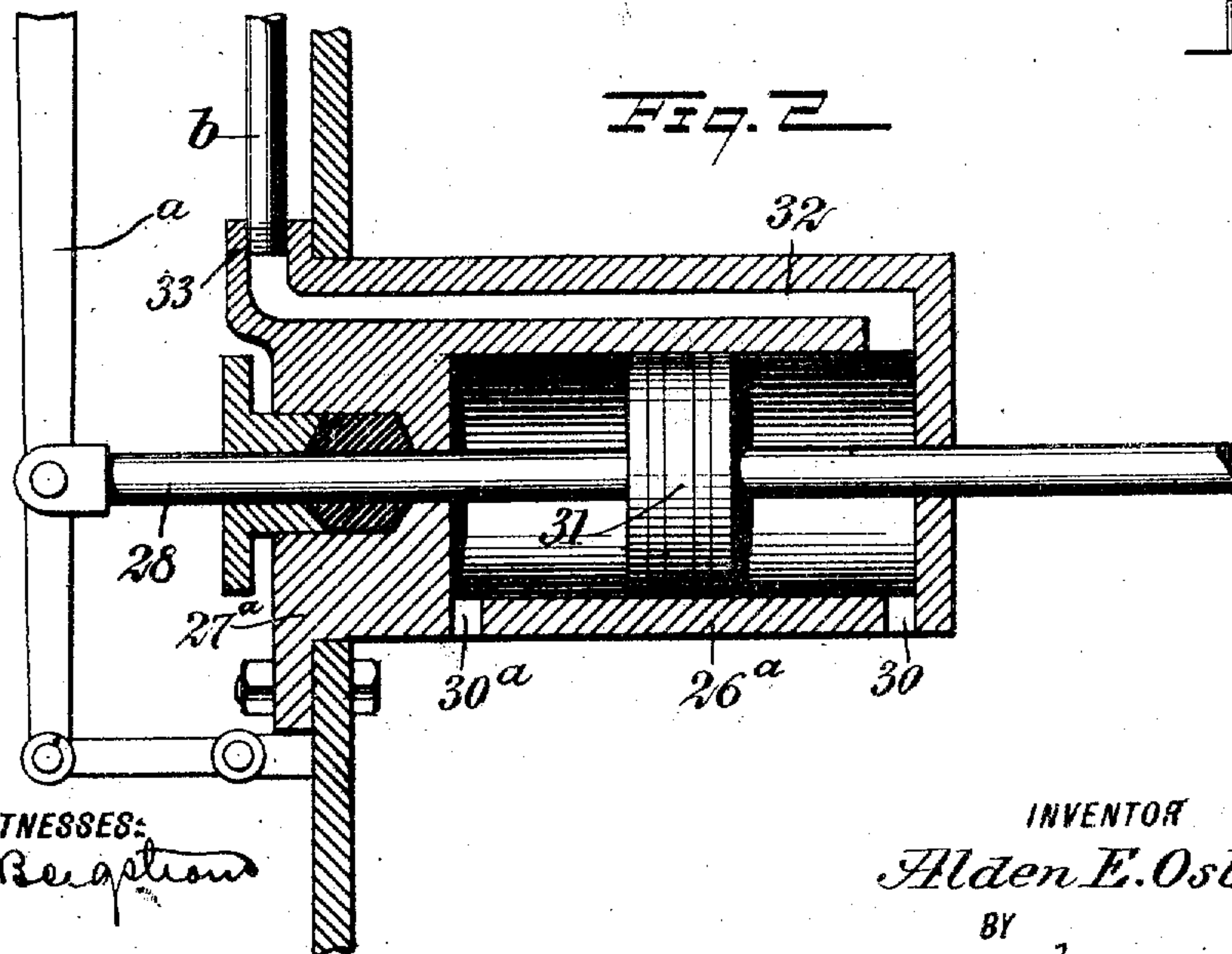
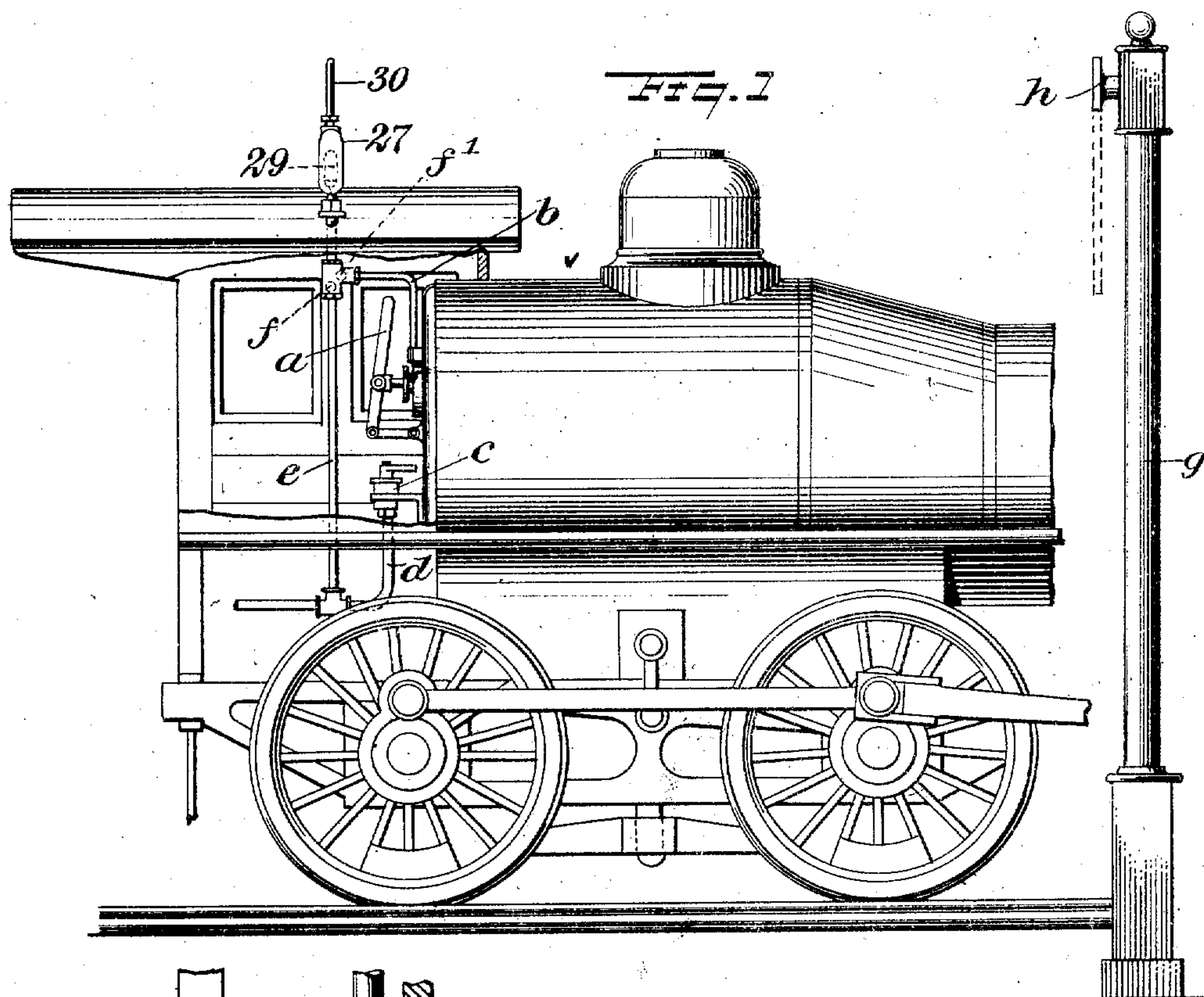


No. 860,882.

PATENTED JULY 23, 1907.

A. E. OSBORN.  
AUTOMATIC CONTROLLER.  
APPLICATION FILED MAR. 27, 1905.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

ALDEN E. OSBORN, OF NEW YORK, N. Y.

## AUTOMATIC CONTROLLER.

No. 860,882.

Specification of Letters Patent.

Patented July 23, 1907.

Application filed March 27, 1905. Serial No. 262,231.

To all whom it may concern:

Be it known that I, ALDEN E. OSBORN, a citizen of the United States, and a resident of the city of New York, (borough of the Bronx,) in the county and State of New York, have invented a new and Improved Automatic Controller, of which the following is a full, clear, and exact description.

The invention relates to an automatic controller designed especially for use with railway trains, but useful in other connections as will suggest themselves to skilled mechanics.

The principal object of my invention is to provide improved means for automatically closing the throttle valve of a locomotive should the engineer disregard a signal to stop or slow down his train to which end I provide a peculiarly constructed fluid pressure motor in connection with the throttle and associated with means for automatically affecting the operating pressure so as to bring about the operation of the motor at the proper time. Preferably in connection with these devices I make provision for venting the train line of the automatic air brake system thus applying the brakes as well as throttling the engine.

The invention involves various other features of major or minor importance, all of which will be set forth hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings which illustrate as an example the preferred embodiment of my invention, in which drawings like characters of reference indicate like parts in the several views, and in which:

Figure 1 is a partial side view of a locomotive showing my invention applied; and Fig. 2 is a sectional view of the throttle operating motor or device.

*a* indicates the throttle lever of the locomotive, this lever controlling the throttle or steam supply valve in the usual manner.

*b* indicates a pipe leading from a device which will be hereinafter described, by means of which the throttle valve may be automatically operated upon releasing the pressure in the pipe *b*.

*c* indicates the brake valve of the usual automatic air brake system, and *d* the train line of pipe. From said train line *d* a branch *e* passes and this branch communicates with the pipe *b*, check valves *f* and *f'* being provided to prevent the return of pressure. The branch pipe *e* passes up through the roof of the cab, and communicates with a whistle 29 contained within a casing 27 mounted on top of the cab. Said casing 27 carries a breakable tube 30 which retains the pressure within the casing.

*g* indicates a semaphore post or stand which is placed on the road bed alongside of the track, and *h* the usual semaphore arm or other visual signal. Preferably these parts are the same as those employed in the ordi-

nary block signal system excepting that the semaphore arm *h* is placed lower than ordinarily, and the location of the tube 30 and the arm *h* are so arranged that when said arm is run out into horizontal position, or that which it usually occupies to bar the passage of the train, the tube 30 will be engaged with the arm and said tube fractured or dislocated so as to vent the pressure from the casing 27. Consequently with the parts arranged as described, when it is desired to bar the passage of the train the semaphore arm may be thrown out as usual.

When the engineer regards the signal and brings his train to a stop my invention will not go into operation. Should the engineer disregard the signal to stop and continue the movement of his train the tube 30 will come in contact with the arm *h* and said tube will become broken or dislocated, venting the pressure and automatically stopping the train as will be hereinafter fully described.

Fig. 2 shows the device for automatically operating the throttle upon the relief of the pressure in the pipe *b*. This device comprises a cylindric shell 26<sup>a</sup> fastened within the boiler of the locomotive, and having a stuffing box and gland 27<sup>a</sup> to which the throttle rod 28 passes. The throttle rod 28 passes on through the cylindric shell 26<sup>a</sup> to the usual connection with the throttle valve. Said shell is provided with a vent 30<sup>a</sup> in each end, and attached to the rod 28 within the shell is a piston 31. Steam pressure from the boiler enters the shell at each side of the piston through the vent 30<sup>a</sup>, and this balances the pressure in said piston, allowing the throttle lever to be operated freely by the engineer. Extending from the inner end of the shell 26<sup>a</sup> is a passage 32, which leads outward to a nipple 33 outside of the boiler. With this nipple, the before described pipe *b* is connected. It will be seen that upon venting the pressure from the pipe *b* the pressure on the inner side of the piston 31 will be relaxed, thus permitting the unchanged pressure on the outer side of the said piston to move the piston and its connections inward, thus automatically closing the throttle valve. This device does not, however, interfere with the free operation of the throttle valve. When therefore the engineer disregards the semaphore and tube 30 is broken, pressure is vented both from the train line and inner end of cylinder 26<sup>a</sup> causing an emergency application of the brakes and a movement of rod 28 closing the throttle valve and stopping the engine. Before the train can proceed it will be necessary to replace the tube 30, release the brakes and return the throttle lever to the position shown in Fig. 2.

Having thus described the preferred form of my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with a device to be opened and walls inclosing fluid pressure, of a cylinder and piston, one of which is movable and connected with the device to be



operated, the piston operating in the cylinder and the cylinder located within said walls and having each end freely open to the fluid pressure therein, and means for relieving the pressure from one end of the cylinder.

5 2. The combination with a locomotive and its throttle rod, of a cylinder located in the locomotive boiler and having each end open to the boiler pressure, the throttle rod extending through the cylinder, a piston attached to the throttle rod and located within the cylinder, and means  
10 for venting the pressure from one end of the cylinder.

3. The combination with a locomotive and its throttle rod, of a cylinder located in the locomotive boiler and having each end open to the boiler pressure, the throttle rod extending through the cylinder, a piston attached to the throttle rod and located within the cylinder, and means  
15 for venting the pressure from one end of the cylinder, said means including a breakable pressure retaining part.

4. The combination with walls inclosing fluid pressure and a device to be operated of a cylinder and piston  
20 located within the walls, the cylinder and piston being relatively movable and the movable element having connection with said device to be operated, the cylinder having each end freely open to expose both sides of the piston to the said fluid pressure and means for venting  
25 the pressure from the cylinder at one side of the piston.

5. The combination with walls inclosing fluid pressure and a device to be operated, of a cylinder and piston located within the walls, the cylinder and piston being relatively movable and the movable element having connection with said device to be operated, the cylinder having  
30 each end open to expose both sides of the piston to the said fluid pressure and means for venting the pressure from the cylinder at one side of the piston, said means including a breakable pressure retaining part.

35 6. The combination with a reservoir for fluid pressure, of a cylinder arranged therein and having its ends freely open to the pressure, a means for venting the pressure from one end of the cylinder, a piston in the cylinder and an operating rod connected to the piston.

40 7. The combination with a locomotive and its throttle rod of a cylinder arranged in the locomotive boiler, and having its ends open to the same, a piston in the cylinder

and connected to the throttle rod and means for venting the pressure from one end of the cylinder.

8. The combination with a locomotive and its throttle  
45 rod of a cylinder arranged in the locomotive boiler, and having its ends open to the same, a piston in the cylinder and connected to the throttle rod and means for venting the pressure from one end of the cylinder, said means including a breakable pressure retaining part projecting  
50 beyond the locomotive for the purpose specified.

9. The combination with a locomotive of a cylinder having one end secured in an orifice in the locomotive boiler, the cylinder projecting into the boiler and having its ends open to the pressure therein, means for venting the pressure  
55 from one end of the cylinder, a piston in the cylinder, a throttle rod connected to the piston and a means for operating the rod located outside of the boiler.

10. The combination with a locomotive of a cylinder having one end secured in an orifice in the locomotive  
60 boiler, the cylinder projecting into the boiler and having its ends open to the pressure therein, means for venting the pressure from one end of the cylinder, a piston in the cylinder, a throttle rod connected to the piston and a means for operating the rod located outside of the boiler,  
65 said means for venting one end of the cylinder including a breakable pressure retaining part projected beyond the locomotive for the purpose specified.

11. The combination with walls inclosing fluid pressure, of a cylinder and piston located within the walls, the  
70 cylinder and piston being relatively movable and the movable element being adapted to have connection with the device to be operated, the cylinder having each end freely open to expose both sides of the piston to the said fluid pressure, means constituting a vent leading from one  
75 end of the cylinder to the atmosphere, and a device commanding said vent.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

AIDEN E. OSBORN.

Witnesses:

ISAAC B. OWENS,

JNO. M. RITTER.